

System Requirements

The SAS[®] System Release 8.2 (TS2M0) OS/2[®]

This document provides requirements for installing and running the SAS System for OS/2. You must update your system to meet the minimum requirements before running the SAS System. The major requirements listed in the document are:

- Software Requirements
- Hardware Requirements
- Additional Features
- Space Requirements
- Specific Product Requirements
- Graphics Hardware and Software Compatibility

For additional information and to view the latest system requirements for your system, access the following Web site:

<http://www.sas.com/newversion>

or contact SAS Institute Technical Support (refer to Chapter 4, "Technical Support Services" in the Installation Instructions included in your package).

Software Requirements

Operating System

- OS/2 Warp 4 updated with Service Pack 7 or later
- Use of the High Performance File System (HPFS) required

Online Help Browser

A Web browser is required for access to the SAS System online help. Netscape Communicator, Version 4.04 for Warp 4 is provided on a separate CD-ROM and must be installed for viewing online help within the SAS System. Proper operation of the online help system requires that TCP/IP services be installed. A network connection is not required.

Hardware Requirements

Machines Supported

- Intel or Intel-compatible Pentium class processor (minimum required)

Floating Point Unit or Math Coprocessor:

A floating point unit or math coprocessor is assumed present in the PC and the SAS System is optimized for its presence. OS/2 provides floating point emulation software with decreased performance in the absence of a floating point unit or math coprocessor.

Memory Requirements

- 32 MB minimum

The MEMMAN config.sys option should specify both SWAP and PROTECT. See the MEMMAN description in the OS/2 Command Reference.

- 32 MB of swapfile space minimum

See the SWAPFILE description in the OS/2 Command Reference.

Monitors Supported

- XGA
- SVGA

Note: It is recommended that the screen resolution be at least 800x600.

Devices Supported

- A mouse is required

Additional Features

Web Browser

A Web browser is required to use two features of the SAS System.

1. Viewing output rendered as HTML pages using the Version 8 Output Delivery System (ODS). Your Web browser can be used to view ODS output in a separate application window.
2. Using the online help system, which is HTML-based. Online help is only viewable with a Web browser.

For your convenience, Netscape Communicator, Version 4.04 for Warp 4 is included with Release 8.2 of the SAS System for OS/2.

Dynamic Data Exchange

Dynamic Data Exchange (DDE) allows for the exchange of data between the SAS System and any other application supporting DDE on OS/2 or WIN-OS/2.

Workplace Shell Support

The SAS System exploits OS/2's user interface, the Workplace Shell, by taking advantage of file drag-and-drop features, context-sensitive pop-up menus, and an iconic point-and-click graphical user interface.

Electronic Mail

`Send mail` is provided as a menu item in the `File` pull-down menu. `Send mail` allows electronic mail messages to be initiated from the SAS System. It is also possible to send mail using a data step file access method or SCL via SAS/AF software. The VIM API is the only mail API supported. This requires installation of third party products such as Lotus ccMail 8.1 (32-bit) or Lotus Notes 4.0 (32-bit or higher).

FTP, Socket, and Catalog Access Methods

External access methods make remote data available to local processing via the FTP and Socket access methods. FTP allows access to remote external files using the TCP/IP ftp service. Access to remote data via the Socket access method, supports TCP/IP socket programming to the SAS Data Step and SAS/SCL. In addition, SAS catalogs can be read as external files using the Catalog Access method.

Lotus Notes

The Lotus Notes access method, NOTESDB, allows populating new documents directly to Lotus Notes from the SAS System. An installed license of Lotus Notes Desktop is required. The SAS System supports Lotus Notes 4.0 (32-bit only).

Re-installation Support

Selection of the re-installation support component causes SAS Setup to create a copy of the SAS System with a customized list of products from which SAS Setup subsequently can be used to create additional installations. Typically, re-installation support would be used by an administrator to create an installable copy of the SAS System on a networked file server machine

Space Requirements

The media you received is customized for your site and contains all of the SAS software products for which you are licensed. The following list contains space requirements in MB for all of the products available with Release 8.2 (TS2M0) of the SAS System for OS/2. Use this information to help you determine how much free disk space you must have available before you can install the SAS System.

Software Product	Disk Space (in MB)
Base SAS Software	0.4
Core of the SAS System (required)	168.0
SAS/ACCESS Interface to Baan Software	0.7
SAS/ACCESS Interface to DB2 Software	0.7
SAS/ACCESS Interface to ODBC Software	0.7
SAS/ACCESS Interface to ORACLE Software	0.8
SAS/ACCESS Interface to PC File Formats Software	1.3
SAS/ACCESS Interface to R/3 Software	11.0
SAS/AF Software	8.5
SAS/ASSIST Software	16.0
SAS/CONNECT Software	3.0
SAS/EIS Software	21.0
SAS/ETS Software	20.0
SAS/FSP Software	0.5
SAS/GIS Software	55.0
SAS/GIS Census Tract Maps*	440.0
SAS/GRAPH Software	30.0
SAS/GRAPH Map Data Sets	105.0
SAS/IML Software	7.0
SAS/INSIGHT Software	13.0
IT Service Vision Client Software	176.0
SAS/LAB Software	7.0
SAS/MDDB Server Software	12.1
SAS OnlineTutor Software	60.0
SAS/OR Software	30.0
SAS/QC Software	25.0
SAS/SECURE 168-bit Software	0.6
SAS/SHARE Software	36.0
SAS/SPECTRAVIEW Software	13.2
SAS/STAT Software	36.0
SAS/Warehouse Administrator Software	16.0
Re-installation Support	6.0
Total	880.5

*SAS/GIS Census Tract Maps are installed from a separate CD-ROM.

The installation of Netscape Communicator, Version 4.04 for Warp 4 requires an additional 8 MB of disk space.

German Language

German Support	Required Disk Space (in MB)	Additional Space for Samples/Optional Files
Base SAS Software, SAS/FSP Software, and SAS/GRAPH Software	180.0	0.0

Specific Product Requirements

SAS/ACCESS Interface to Baan Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to Baan software

Additional functionality is obtained if the following product is installed:

- SAS/Warehouse Administrator software

DBMS Products Required:

One of the following Baan releases is required:

- Baan IV
- BaanERP

SAS/ACCESS Interface to Baan software requires the Exchange Module from Baan Utilities.

SAS/ACCESS Interface to DB2 Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to DB2 software

DBMS Products Required:

One of the following releases of IBM's Client Application Enabler software is required:

- IBM DB2 Universal Database Client Application Enabler, Version 5 or later

Before using SAS/ACCESS Interface to DB2 software, you must install the appropriate IBM DB2 Client Application Enabler to allow your PC to connect to a DB2 server. Contact your database administrator for assistance with the Client Application Enabler's Client Setup utility.

For more information about SAS/ACCESS Interface to DB2 software, please see the DB2 chapter in **SAS/ACCESS Software for Relational Databases: Reference**.

SAS/ACCESS Interface to ODBC Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to ODBC software

DBMS Products Required:

- An 32-bit ODBC driver for the source which you want to access data

Before you can use SAS/ACCESS Interface to ODBC software, a 32-bit ODBC driver for the data source from which you want to access data is required. These ODBC drivers are often available from the DBMS vendors and other third party ODBC driver developers. The ODBC driver you choose may require additional DBMS software for network access. All required network software supplied by your database system vendor must be 32-bit-compliant.

Note: SAS/ACCESS Interface to ODBC software has been tested using the MERANT DataDirect Connect ODBC driver and the DataDirect SequeLink ODBC driver.

SAS/ACCESS Interface to ORACLE Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to ORACLE software

DBMS Products Required:

- Oracle SQL*Net Client, Version 2.3 for OS/2
- Oracle Protocol Adapter, Version 2.3 for OS/2

You need to install SAS/ACCESS Interface to ORACLE software and Oracle SQL*Net Client, Version 2.3 on the same client workstation. SAS/ACCESS Interface to ORACLE software for OS/2 only supports Oracle Client, Version 7.3. However, it can connect to any version of an Oracle database with the SQL*Net, Version 2 listener running on the server.

SAS/ACCESS Interface to R/3 Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to R/3 software

Additional functionality is obtained if the following products are installed:

- SAS/Warehouse Administrator software
- SAS/CONNECT software
- SAS/SHARE software

SAS/ACCESS Interface to R/3 software requires the use of communication protocols such as TCP/IP to function properly.

SAP R/3 Products Required:

- SAP R/3, Release 3.0A or higher
- SAP R/3 Remote Function Call Software Development Kit (RFCSDK)

February 26, 2004

Release 8.2 (TS2M0), OS/2

SAS/AF Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software
- SAS/GRAPH software (to create and display some graphics objects)
- Other products may be required depending on the application

Products Required for Run Mode:

- Base SAS software
- SAS/GRAPH software (to display some graphics objects)
- Other products may be required depending on the application

Printers:

- A color or gray scale printer is required for printing graphics-based objects.
- Certain non-graphic objects may require SAS/GRAPH software to print depending on the object.

Video Player Object in SAS/AF Software

Hardware:

- Minimum of 256 colors
 - Video board supporting true color mode (65K or 16.7 MB colors) recommended
- Audio is not supported on OS/2

Base SAS Software

Video Player in Base SAS Software

A Video Player utility is included with Base SAS software. This allows users to play video clips on their workstations. The Video Player Object (Class) is actually part of SAS/AF software.

Hardware:

- Minimum of 256 colors
 - Video board supporting true color mode (65K or 16.7 MB colors) recommended
- Audio is not supported on OS/2

SAS/CONNECT Software

APPC Access Method:

With the APPC access method, an OS/2 user is provided access to an SNA network. The APPC access method requires the following system software packages:

- IBM's CM/2, Version 1.11
- IBM's Communication Service for OS/2 Warp 4 or later
- Any OS/2 Version 2.11 or subsequent version's emulation program that supports IBM's APPC standard

EHLLAPI Access Method:

The EHLLAPI access method requires one of the following emulation packages:

- IBM's CM/2, Version 1.11 or subsequent versions
- IBM's PCOMM (Personal Communications) 4.1 for 32-bit EHLLAPI support or subsequent versions
- Any emulation program that supports the EHLLAPI standard

NetBIOS Access Method:

For the NetBIOS access method, SAS/CONNECT software provides access methods to support both the NETBIOS IBM 3.0 interface and the NETBIOS LAN Manager 1.0 Submit Interface.

The following products are supported for the NETBIOS IBM 3.0 Interface:

- IBM's LAN Enabler, Version 2.0 or subsequent versions
- IBM's LAN Server, Version 2.0 or subsequent versions
- IBM's NTS/2, Version 1.0 or subsequent versions

The following products are supported for the NETBIOS LAN Manager 1.0 Submit Interface:

- Novell's NetWare Requestor for OS/2 Warp 4 or later
- IBM's LAN Enabler, Version 2.0 or subsequent versions
- IBM's LAN Server, Version 2.0 or subsequent versions

TCP/IP Access Method:

For the TCP/IP access method, SAS/CONNECT software supports IBM's TCP/IP System Driver, which is provided with OS/2.

SAS/EIS Software**Products Required for Build Mode:**

- Base SAS software
- SAS/AF software
- SAS/EIS software
- SAS/FSP software
- SAS/GRAPH software
- Other products may be required depending on the application

Products Required for Run Mode:

- Base SAS software
- SAS/GRAPH software
- SAS/EIS software
- Other products may be required depending on the application

Memory:

- 64 MB required
- 96 MB recommended

SAS/GIS Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software
- SAS/GIS software
- SAS/GRAPH software
- Other products may be required depending on the application

Products Required for Run Mode:

- Base SAS software
- SAS/FSP software
- SAS/GIS software
- SAS/GRAPH software
- Other products may be required depending on the application

Printers:

- A color or gray scale printer is required. The list of possible printers can be found in the **Graphics Hardware and Software Compatibility** section.

Display:

- 256 color display adapter strongly recommended

IT Service Vision Solution (Release 2.5)

Products Required for IT Service Vision Client:

- Base SAS software
- IT Service Vision Client Solution, which contains:
 - IT Service Vision Client software and necessary elements of the following:
 - SAS/AF software
 - SAS/CONNECT software
 - SAS/EIS software
 - SAS/FSP software
 - SAS/GRAPH software
 - SAS/INSIGHT software

Disk Space Required for IT Service Vision Client:

The disk space required for the IT Service Vision Client Solution is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

Note: If you have Release 8.2 of the SAS System already installed, then the amount of disk space required to install the IT Service Vision Client Solution should be decreased by the disk space of any of the above products that have been previously installed.

Other Requirements for IT Service Vision Client:

- IT Service Vision requires a screen resolution of at least 800x600. If your display is set to a lower screen resolution, some windows may be truncated to fit the screen. If you experience font display problems, you may want to use the default SAS font. To set the default font type, issue the SAS command `dlgfont` at the command prompt. In the `Font` window, select the font `Sasfont`, a style of `regular`, and font size 10.
- Adobe Acrobat Reader 3.x is required for some online documents supplied in printable form.

SAS/LAB Software

Products Required:

- Base SAS software
- SAS/FSP software (required for interactive data entry)
- SAS/GRAPH software
- SAS/LAB software

SAS/MDDB Server Software

Memory:

The memory requirements for SAS/MDDB Server software are dependent upon the complexity of the hierarchies generated.

- 48 MB required
- 64 MB recommended

Large applications will see performance improvements with more available memory.

SAS OLAP Server Package

Products Required:

- Base SAS software
- SAS OLAP Server Package, which contains necessary elements of the following:
 - SAS/MDDB Server software
 - SAS/AF software
 - SAS/GRAPH software

Disk Space Required:

The disk space required for the SAS OLAP Server Package is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

Note: If you have Release 8.2 of the SAS System already installed, then the amount of disk space required to install the SAS OLAP Server Package should be decreased by the disk space of any of the above products that have been previously installed.

SAS OnlineTutor Software

Netscape Communicator, Version 4.6 is required if running SAS OnlineTutor software from a Web browser.

SAS/SHARE Software

APPC Access Method:

With the APPC access method, an OS/2 user is provided access to an SNA network. The APPC access method requires the following system software packages:

- IBM's CM/2, Version 1.11
- IBM's Communication Service for OS/2 Warp 4 or later
- Any OS/2 Warp or subsequent version's emulation program that supports IBM's APPC standard

NetBIOS Access Method:

For the NetBIOS access method, SAS/SHARE software provides access methods to support both the NETBIOS IBM 3.0 interface and the NETBIOS LAN Manager 1.0 Submit Interface.

The following products are supported for the NETBIOS IBM 3.0 Interface:

- IBM's LAN Enabler, Version 2.0 or subsequent versions
- IBM's LAN Server, Version 2.0 or subsequent versions
- IBM's NTS/2, Version 1.0 or subsequent versions

The following products are supported for the NETBIOS LAN Manager 1.0 Submit Interface:

- Novell's NetWare Requestor for OS/2 2.0
- IBM's LAN Enabler, Version 2.0 or subsequent versions
- IBM's LAN Server, Version 2.0 or subsequent versions

TCP/IP Access Method:

For the TCP/IP access method, SAS/SHARE software supports IBM's TCP/IP System Driver, which is provided with OS/2.

SAS/SPECTRAVIEW Software

SAS/SPECTRAVIEW software, one of the SAS System's newest data visualization and modeling tools, allows you to create, analyze, and modify geometric images representing multidimensional data. This software is useful for a variety of applications, including medical imaging, oil exploration, environmental sciences, chemical analysis, pharmaceutical studies, and financial analysis.

Hardware:

- Minimum screen resolution - 800x600 pixels
- Minimum of 256 colors

SAS/Warehouse Administrator Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software (required only for API usage)

Products Required for Run Mode:

- Base SAS software
- Other products depending on application (e.g., SAS/ACCESS software for access to DBMS tables, SAS/CONNECT software for access to remote data, or SAS/AF software to access warehouse via method calls)

Memory:

- 64 MB recommended

CPU:

- 200 MHz Pentium Processor recommended

Monitors Supported:

- VGA
- SVGA
- XGA

Printers:

- For printing graphics-based objects, a color or gray scale printer is required.
- Certain non-graphic objects may require SAS/GRAPH software to print depending on the object.

Graphics Hardware and Software Compatibility

Printers

SAS/GRAPH software supports any graphics printer that has an IBM OS/2 device driver available. This support is provided via the OS2PRTM (for monochrome printers), OS2PRTG (for printers that support gray-scale shading), and OS2PRTC (for color printers) device drivers.

As an alternative to the OS2PRTx series of drivers, SAS/GRAPH native device drivers are available for all Hewlett-Packard printers (and compatibles), and printers that support PostScript, HP-GL, HP PCL, and other printer languages.

Here is a partial list of printers that SAS/GRAPH software supports with native device drivers:

CalComp ColorMaster, ColorMaster Plus, PlotMaster
Canon Bubble Jet, Laser Shot
Digital printers which support either SIXEL, HP PCL, Tektronix, or PostScript emulation modes
Epson FX and LQ series printers (and all printers running in Epson emulation mode)
Hewlett-Packard LaserJet, DeskJet, PaintJet, and DesignJet printers (and compatibles)
IBM Graphics, Proprinter, and ColorJet printers
PostScript printers (including color and gray-scale PostScript printers)
QMS Colorgrafix with CGM interpreter
QMS 800, 1200, 1500, 2200, and 2400 using QUIC or Tektronix emulation modes
Talaris 800, 802, 1200, 1500, and 2400 using QUIC or Tektronix emulation modes
Talaris printers using the EXCL language
Tektronix Phaser printers (all models)
Tektronix 4693 printers with Tektronix 4510 rasterizer
Xerox 2700 and 4045 printers with a GRAPHX cartridge
Xerox 3700 (with imaging board and at least 1M of memory)
Xerox 4030 (contact Technical Support), 4213, 4235, and 4700
Xerox 4700 printer
Xerox 5775 color copier with an EFI Fiery attachment

Native drivers may also be available for additional printers not listed above and that do not support PostScript, HP-GL, or HP PCL. Contact SAS Institute Technical Support for additional information on these drivers.

Plotters

SAS/GRAPH software supports any plotter that has an IBM OS/2 plotter driver available. This support is provided via the OS2PLOT device driver.

As an alternative to the OS2PLOT device driver, SAS/GRAPH software also provides native device drivers for all HP plotters supporting HP-GL or HP-GL/2, and plotters from other manufacturers that support the HP-GL or HP-GL/2 language. SAS/GRAPH software also supports Houston Instruments plotters using the DMPL language and ZETA plotters that support the GML language.

Film Recorders

SAS/GRAPH supports any film recorder that has an IBM OS/2 driver available. This support is provided via the OS2PRTC device driver. As an alternative to the OS2PRTC device driver, SAS/GRAPH software also provides native device drivers that support the following film recorders:

Genigraphics Masterpiece Camera System with SCODL interface
Lasergraphics MPS 2000 film recorder with a Lasergraphics UI-100 or RASCOL rasterizer
Matrix QCR and PCR cameras with Matrix QVP, MVP, or Lasergraphics rasterizers
Polaroid Palette CI-3000 and CI-5000
Presentation Technologies Montage film recorder

Support may be available for other film recorders not listed here. Contact SAS Institute Technical Support for details.

Interfaces to Other Graphics Software

Included with SAS/GRAPH software is a series of drivers that can produce Computer Graphics Metafiles (CGM) in binary, character, and clear-text formats. These drivers can be used to transfer SAS/GRAPH output to other products that support CGM input, such as Word for Windows, WordPerfect for Windows, Harvard Graphics, and Lotus Freelance, or to devices that can process CGM input.

SAS/GRAPH software can also generate encapsulated PostScript vector files, which can be exported to word processing packages such as Microsoft Word, WordPerfect, and several others.

Many other graphics and word processing applications can process files in Hewlett-Packard (HP-GL) format. The HPGL driver can be used to produce files that can be transferred to most applications that can process HP-GL files. In addition, there are drivers for PDF, PBM, PPM, GIF, JPEG, EMF, WMF, PNG, TIFF, EPSI, and PaintBrush image formats. To view a complete list of all SAS/GRAPH device drivers, submit the following SAS program:

```
proc gdevice c=sashelp.devices nofs;  
  list _all_;  
run; quit;
```

SAS/GRAPH software can also export graphics in the following formats:

BMP - Microsoft Windows Bitmap
DIB - Device Independent Bitmap
EPSI - Encapsulated PostScript Interchange
GIF - Graphics Interchange Format
JFIF - JPEG File Interchange Format
MET - OS/2 Metafile
PBM - Portable Bitmap
PNG - Portable Network Graphics
PS - PostScript Bitmap
TIFF - Tagged Image File Format

In addition, SAS/GRAPH software can import graphics in the following formats:

BMP - Microsoft Windows Bitmap
DIB - Device Independent Bitmap
EPSI - Encapsulated PostScript Interchange
GIF - Graphics Interchange Format
JFIF - JPEG File Interchange Format
MET - OS/2 Metafile
PBM - Portable Bitmap
PCD - Kodak Photo-CD
PCX - PC PaintBrush
PNG - Portable Network Graphics
TGA - Targa format
TIFF - Tagged Image File Format
XBM - X Window Bitmaps
XWD - X Window Dump

Viewing HTML Pages Created with the ActiveX and Java Device Drivers

The ActiveX and Java device drivers allow you to create HTML pages from within the SAS System.

The HTML pages created with the ActiveX device driver can only be viewed on Windows operating systems with Internet Explorer, Version 5.

The HTML pages created with the Java device driver can only be viewed *with* the following Java-enabled Web browsers *on* the following operating systems:

Java-enabled Web Browser	Operating System
Netscape Navigator, Version 4.08 or higher	AIX, HP-UX, Solaris, ABI for Intel Architecture, IRIX, Compaq Tru64 UNIX
Netscape Communicator, Version 4.04 for Warp 4	OS/2
Internet Explorer, Version 5 (with Java VM 5.0.0.3167 or higher) or Netscape Navigator, Version 4.07	Windows, Windows NT, Windows NT Server

SAS® and all other SAS Institute product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries.

IBM and all other International Business Machines Corporation product or service names are registered trademarks or trademarks of International Business Machines Corporation in the USA and other countries. Oracle and all other Oracle Corporation product or service names are registered trademarks or trademarks of Oracle Corporation in the USA and other countries. Other brand and product names are registered trademarks or trademarks of their respective companies.

® indicates USA registration.

Copyright © 2000 SAS Institute Inc. Cary, NC, USA. All rights reserved.